

# BUILDING PLANNING SERVICE

NATIONAL ASSOCIATION OF BUILDING OWNERS AND MANAGERS

~~RESTRICTED~~

~~SECURITY INFORMATION~~

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Copy for

Lt. Gen. Ralph J. Canine, ~~Jr.~~

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\* \* \* \*

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\* \* \* \*

NATIONAL ASSOCIATION OF BUILDING OWNERS AND MANAGERS

BUILDING PLANNING SERVICE

Administration Building - National Security Agency

Washington, D. C. - May 17 - 19, 1953

COMMITTEE

George R. Bailey	- Albert H. Wetten & Co., Chicago
E. H. Cary, Jr.	- Medical Arts Building, Dallas
Robert S. Curtiss	- The Port of New York Authority, New York
J. Clydesdale Cushman	- Cushman & Wakefield, Inc., New York
Paul G. Heidman	- The Detroit Edison Company, Detroit
Charles L. Hutton	- Park Building, Pittsburgh
Earle Shultz	- Building Management Consultant, Chicago
W. A. Stahl	- Merchandise Mart, Chicago
H. W. Wilds	- New York Life Insurance Company, New York

EX - OFFICIO MEMBERS OF COMMITTEE

James M. Bradford	- President, Seattle
Maynard Hokanson	- Secretary-Treasurer, Indianapolis
Robert B. Beach	- Executive Vice-President, Chicago

(Officers of National Association  
of Building Owners and Managers)

(Continued)

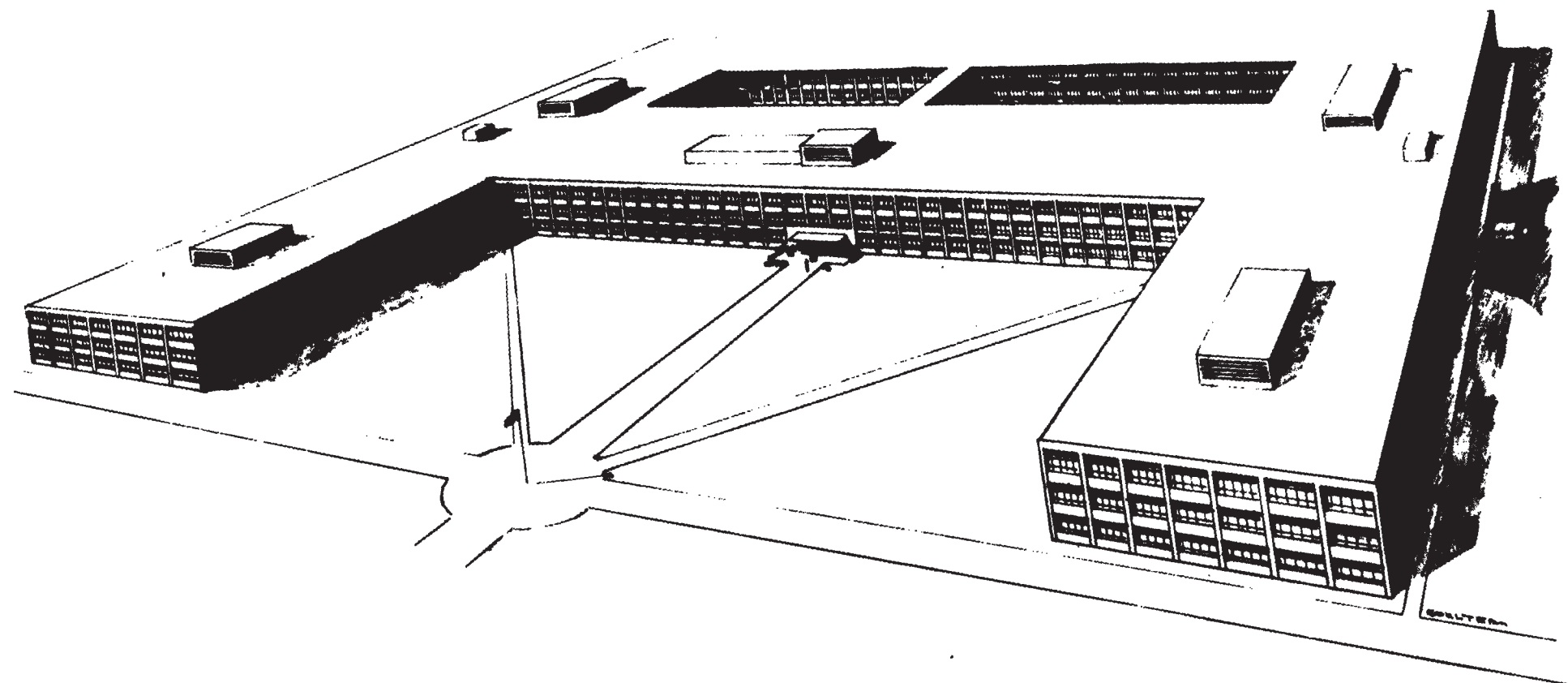
CLIENT REPRESENTATIONI. Representing N.S.A.

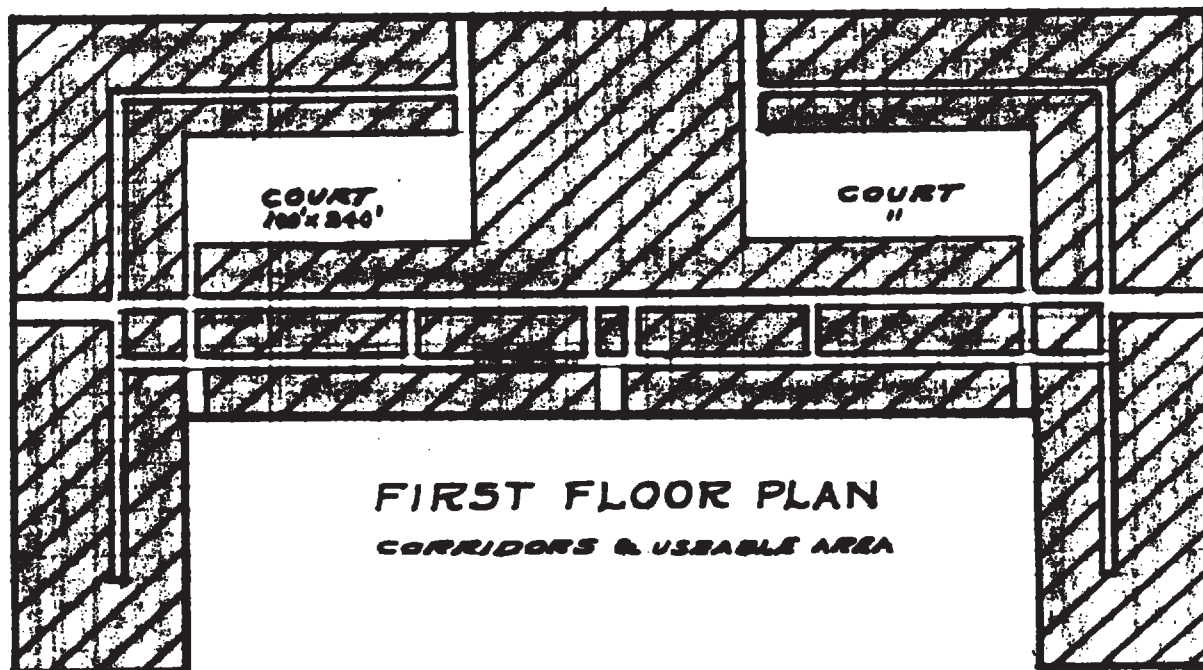
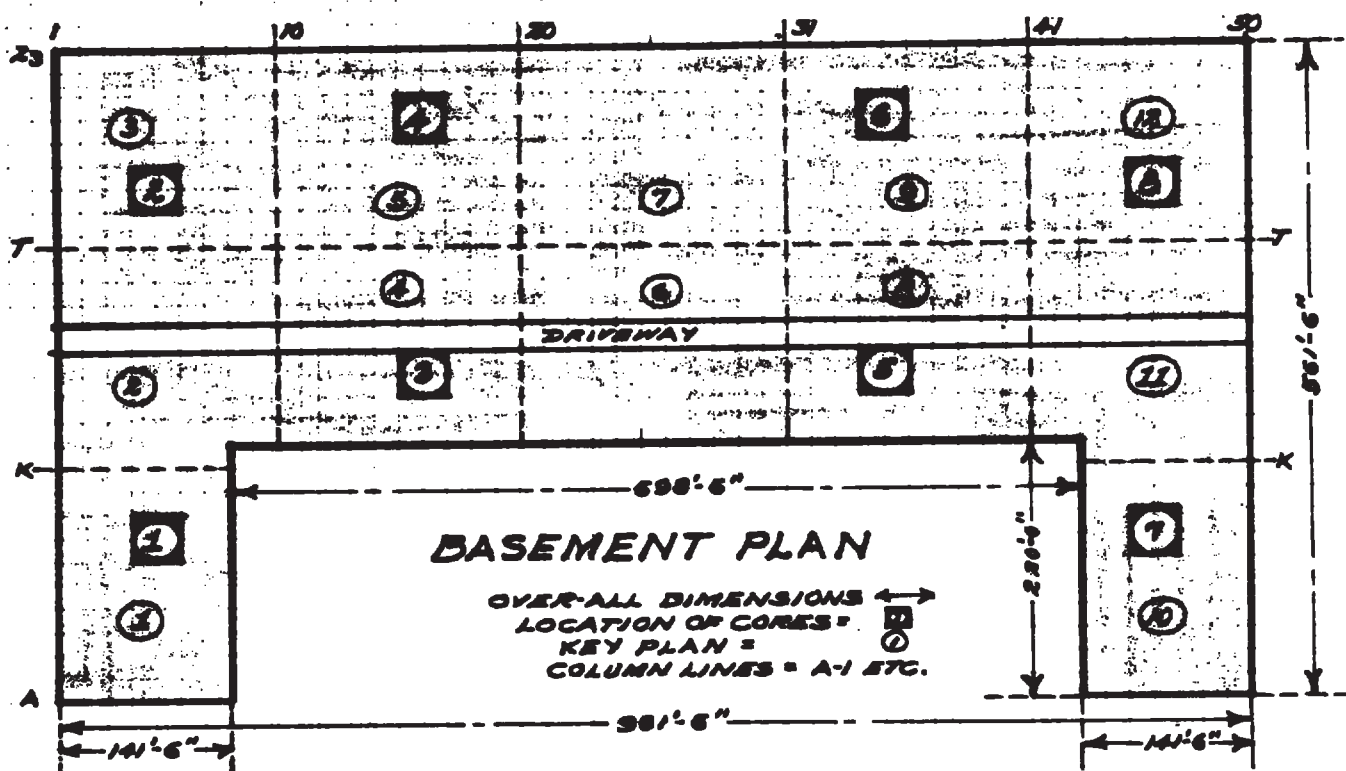
1. Director  
Lt. Gen. Ralph J. Canine, Jr. USA
2. Executive Deputy Director (Chief of Staff)  
Col. A. R. Marcy, USA
3. Comptroller  
Col. C. A. Clark, Jr., USAF  
Col. Edwin B. Cooper, USAF  
Major G. T. Grottle, USAF  
H. J. Brown (Anderson and Nichols,  
Management Consultants)
4. Movement Group  
(b) (3) - P.L. 86-36  
Col. A. C. Cunkle, USA
5. Assistant Director (Office #1)  
Capt. J. S. Harper, USN  
Col. J. E. Condron, USAF
6. Assistant Director (Office #2)  
Col. F. E. Herrelko, USAF
7. Assistant Director (Office #3)  
Dr. S. Kullback
8. Security Division  
Col. Leslie H. Wyman, USA
9. Logistics Division  
Col. W. A. Shaw, USA
10. Communications Division  
Lt. Col. W. B. Campbell, USA
11. Headquarters Commandant  
Cdr. R. W. Mindte, USN

II. Representing Army Engineers  
(District Engineer, Baltimore District)  
Capt. D. P. Tollis, USA

III. Representing Architectural Engineers  
(Anderson and Nichols Company)

1. Evan R. Anderson
2. Harold B. Fosher
3. George Stoner
4. John Burrows





**NOTE:**

DIMENSIONS, COLUMN LINES,  
KEY PLAN & CORRIDOR SCHEME  
ARE TRUE FOR 1st, 2nd & 3rd FLOORS.  
FLAYS ARE 20' x 20'.

**NATIONAL ASS'N BLDE. OWNERS & MGRS.  
CHICAGO, ILLINOIS**

~~Restricted~~PRELIMINARY DATA

Among the special features involved in this assignment is the fact that it deals with "classified" information. Plans and applicable data are alike "restricted." Certain background material, normally available, has necessarily been withheld.

Essential physical details follow:

Project: Administration Building of National Security Agency to be erected at Fort Meade, Maryland.

Site: Approximately one mile square, enclosed on all sides which, in addition to extensive parking facilities, will contain an electrical substation, storage warehouse and other supplemental structures.

Administration Building: Three stories and basement, of concrete and slab construction, containing approximately 1,400,000 square feet, gross, 1,150,000 square feet of net usable area and a volume of 19,328,000 cubic feet.

Estimated cost: \$32,336,000 overall, of which \$23,858,000 is for the building itself.

This building will house the executive offices and administrative departments of the Agency and will also accommodate certain related activities of a specialized nature.

There will be a laboratory installation extending upward through one wing, and a workshop development extending upward through the opposite wing.

An off-set printing plant will be located in one portion of the basement. A first floor cafeteria will meet an obvious need in the absence of restaurant facilities in the immediate neighborhood.

The plans provide for an auditorium, a dispensary and a museum, and provision is made for the usual requirements of a large establishment, such as filing space which in this instance is extensive.

The floor area is laid out on a 4-foot module. The column spacing is 20-foot. Each office floor is divided into 12 areas.

Escalators, of which there are four (two reversibles and one double run), take the place of elevators, except for freight elevators, of which there are two, plus two smaller installations serving special purposes, and two hydraulic lifts.

The building, as planned, has 7 entrances, the main entrance being at the center of the west exposure. There is a carefully prepared exit schedule relating to the width of corridors and entrances.

The exterior, as specified, consists of concrete columns with dark green wired glass spandrels and fixed clear glass windows set in galvanized iron frames.

Floor to floor basement height is 15 feet; first and second floors 13 feet; third floor 12 feet 8 inches.

Interior layout is designed for flexibility with a high proportion of movable partitions - even in part for corridors. Flexibility is one of the primary aims to provide for unpredictable future requirements.

There are 8 service cores which contain toilet rooms and air conditioning equipment. Distribution of mechanical facilities to the surrounding area is from these cores.

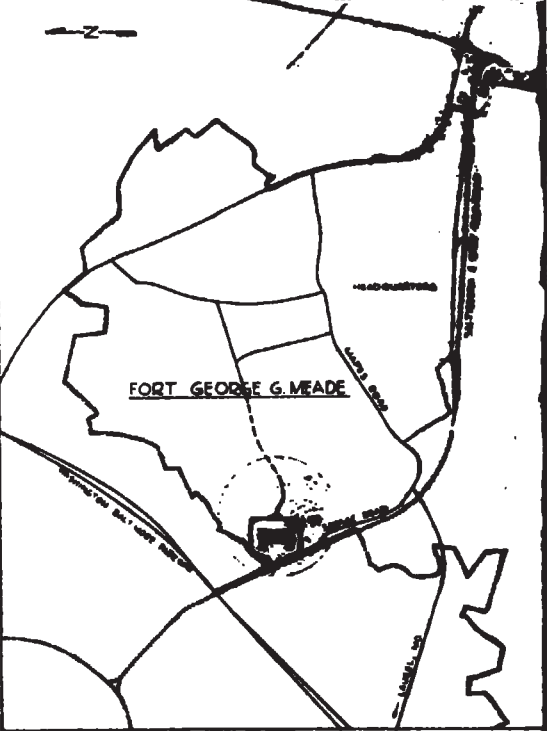
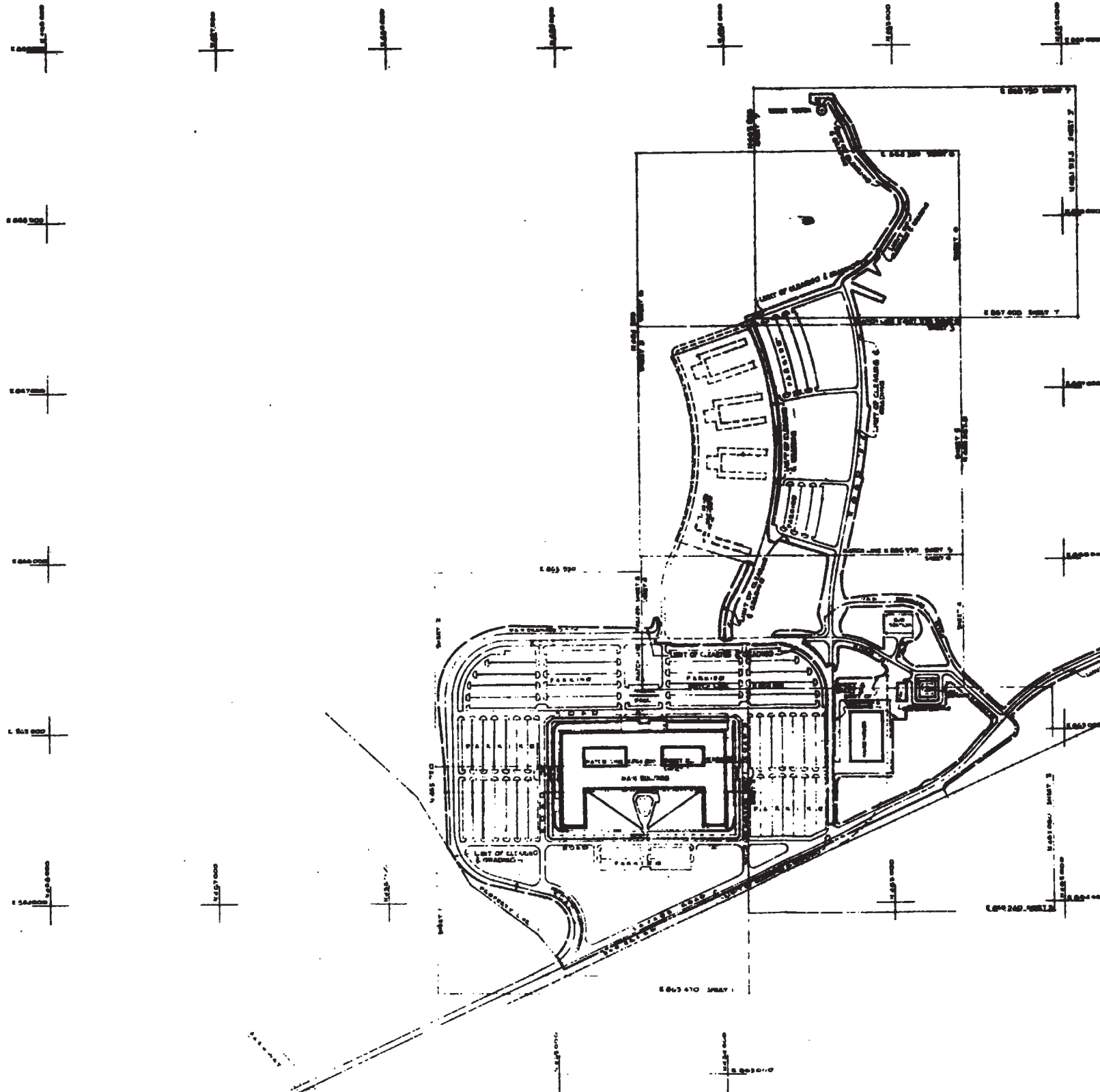
The building will be fully air conditioned. Plans call for a high percentage of acoustical ceiling treatment. Fluorescent lighting predominates. There is a substantial distribution of power to different areas.

Types of floor treatment specified for varying purposes include terrazzo, concrete cement finish, asphalt tile, ceramic tile, quarry tile, rubber tile and wood block. More asphalt tile is contemplated than anything else.

A 16-foot roadway runs lengthwise through the basement to facilitate receipt and dispatch of freight. There is also a recessed 2-truck loading dock.

An important problem which applies to all departments is that of inter-communication, the facilities including vertical and overhead conveyors, a pneumatic tube installation, teletype equipment and a public address system.

Along with flexibility and communication, the client is especially interested in provisions that make for economical operation and materials that will stand up under heavy usage.

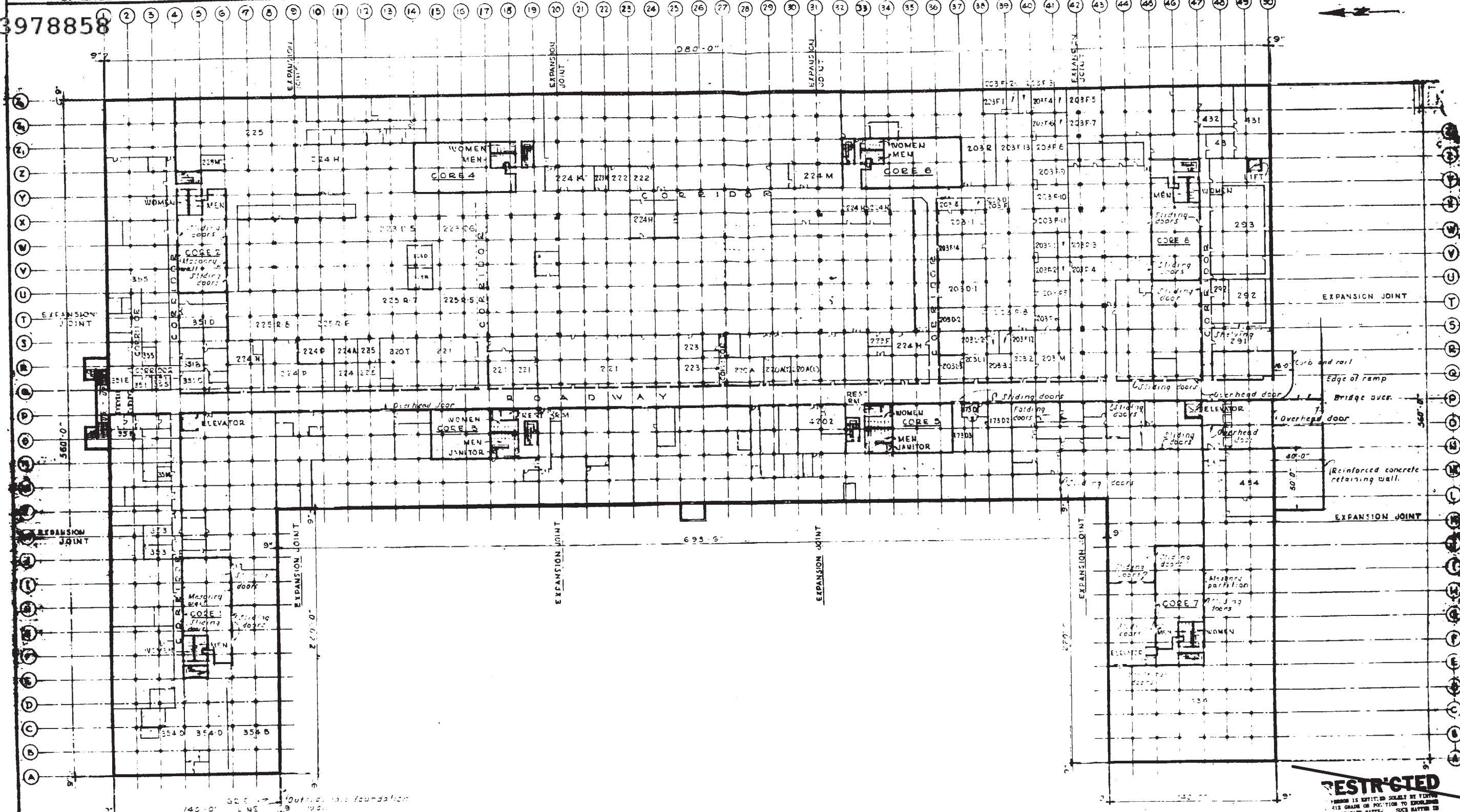


LOCATION PLAN  
SCALE: 1" = 2000'

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CHECKED BY		MAIN BUILDING	
DRAWN BY		GENERAL SITE PLAN	
REVISIONS			
APPROVED FOR THE DISTRICT ENGINEER		DATE 30 05-01	
		SHEET 1 OF 1	

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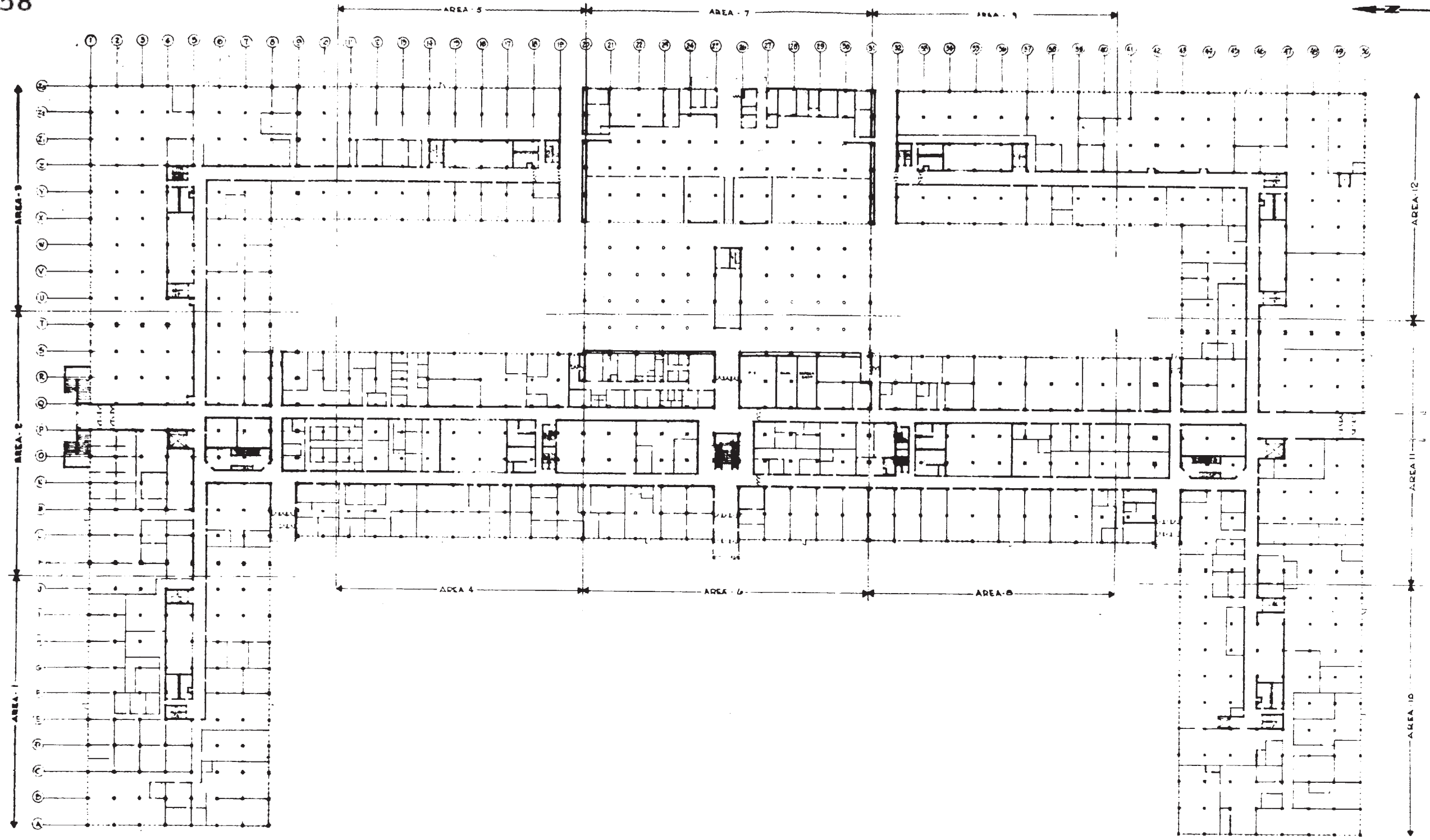


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<p><b>N.S.A. CONSTRUCTION PROJECT</b></p> <p><b>MAIN BUILDING</b></p> <p><b>BASEMENT FLOOR PLAN</b></p>			
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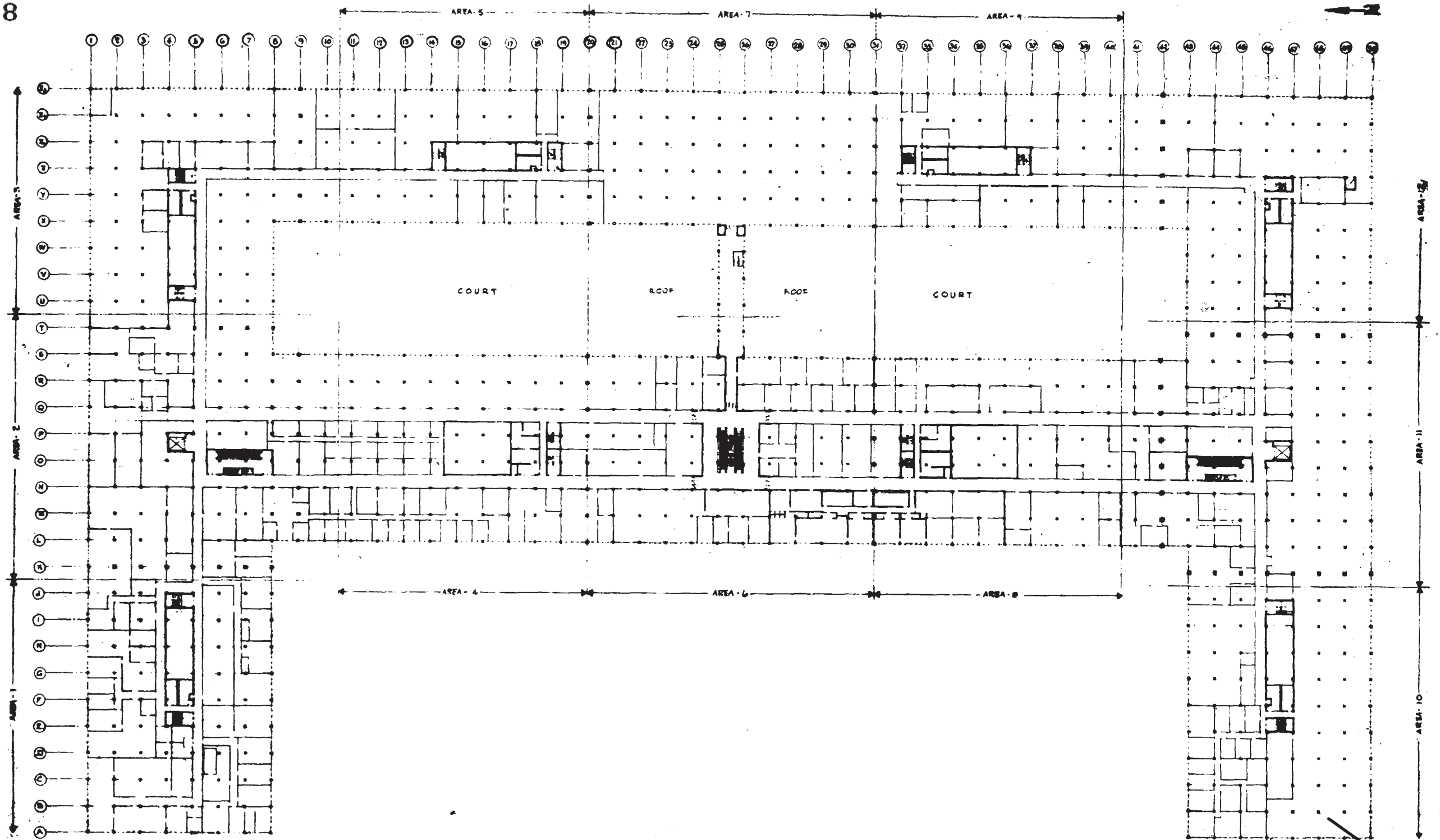
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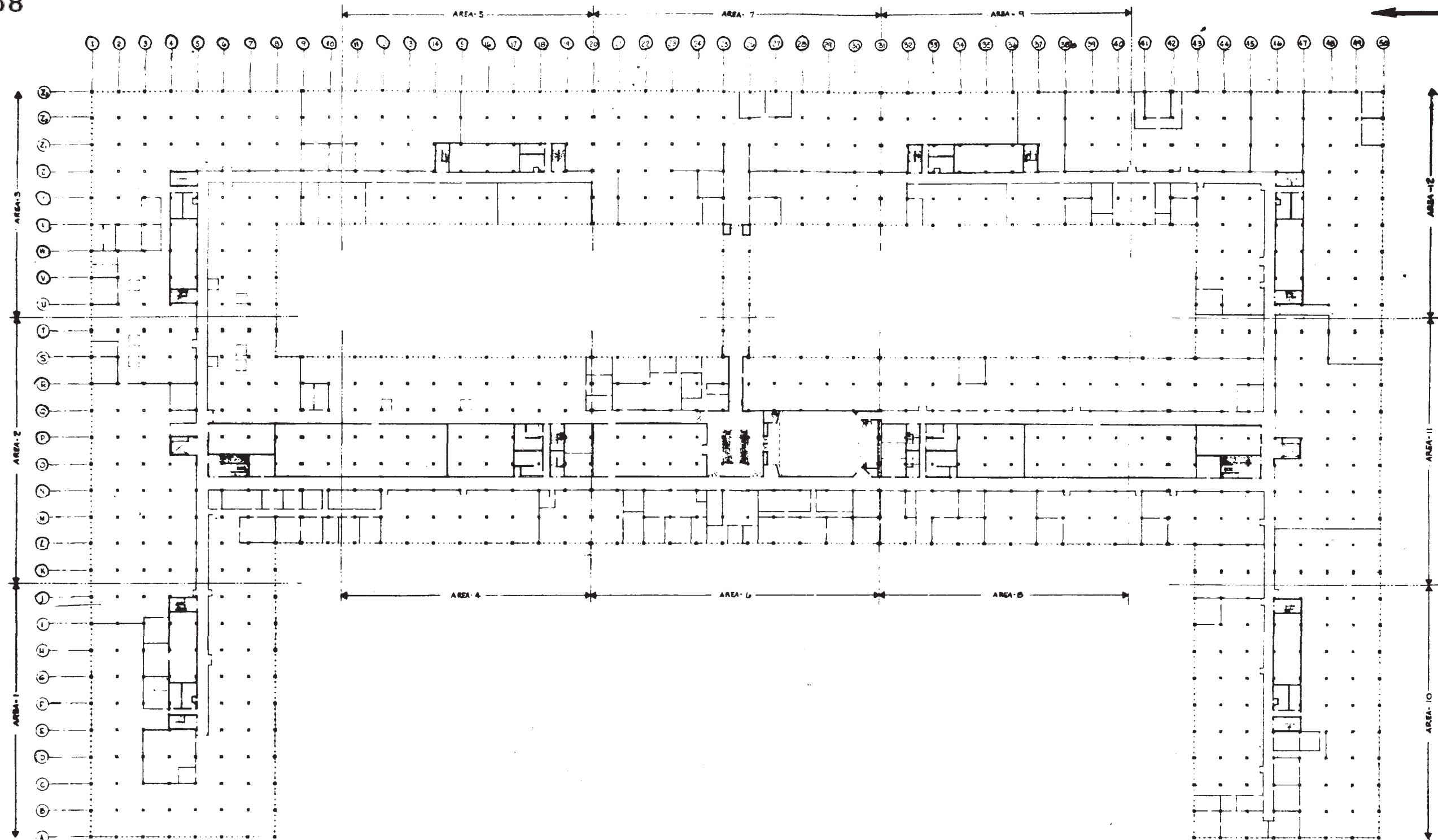
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N. S. A. CONSTRUCTION PROJECT  
MAIN BUILDING  
KEY PLAN  
• SECOND FLOOR

**PRELIMINARY**



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N. S. A. CONSTRUCTION PROJECT  
MAIN BUILDING  
KEY PLAN  
THIRD FLOOR

APPROVED \_\_\_\_\_  
DATE \_\_\_\_\_

SCALE \_\_\_\_\_

SHEET \_\_\_\_\_

PRELIMINARY

BUILDING PLANNING SERVICE ORDER OF PROCEDURE

National Association of Building  
Owners and Managers

Assignment: Administration Building,  
National Security Agency,  
Fort Meade, Maryland

Meeting Place: Washington, D. C.

Date: May 17 - 19, 1953

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PART I. Definition of Project

A. CHAIRMAN:

- 1) Introduction of Committee Members and Clients' Representatives
- 2) Objectives of Building Planning Service
- 3) Special conditions of this assignment
- 4) Explanation of procedure

B. OWNER:

- 1) General statement of purpose and objectives sought in construction of project
- 2) Special conditions imposed by the fact that much of the information normally available rates as "classified" or "restricted."
- 3) General description of physical characteristics, covering -

Reason for building  
Location  
Site - size and facilities  
Building - dimensions and elevations  
Functional uses  
Means of access (highway, etc.)  
Collateral housing problems, if any

- 4) Particular problems on which recommendations of Planning Committee are expressly desired.

C. ARCHITECT:

Outline development of plans, site limitations (if any), special requirements, etc.

Local restrictions (if any) affecting type of construction, fire protection, traffic movement, etc.

Any governing conditions by owner

General description of -

Plans

Mechanical equipment

Special features

Ratio of square foot usable space developed to cubic content

Estimated cost of building

Cost of building per cubic foot

Cost of building per square foot of usable area produced

Cubic content and net usable area

Public utility facilities

Completion date

PART II. Construction DetailSECTION (1) - FLOOR PLANS(A) FLOOR PATTERN - TYPICAL FEATURES

General layout, modular characteristics

Light courts, size and location

Column spacing

Depth of space

Window treatment, glass area, division spacing

Escalators - number and location

Elevators - number and location

Corridors (permanent or flexible) - width and location

Core area locations - stairs, toilets, etc.

"Wet" columns - number and distribution

→ Service rooms, location

(B) BASEMENT FLOOR PLAN

Clear ceiling height

Stairs, width, location

Corridors

Storage facilities

Freight elevators

Facilities for receiving and discharging freight

Mechanical facilities

Engine room

Air conditioning equipment

Electrical equipment

Water

Gas

Conveyors

Specialized equipment

SECTION (1) - FLOOR PLANS(B) BASEMENT FLOOR PLAN (Continued)

Allocation of space to functional activity  
Floor drains  
Sewer connections and elevations  
Telephone and telegraph room  
Telephone booths  
Sprinklers  
Employee facilities

(C) FIRST FLOOR PLAN

Main entrance, ceiling height, treatment  
Doors: revolving, swing, balanced  
Other entrances and treatment  
Lobby treatment: floors, walls, ceiling  
Lobby facilities - telephones  
Vestibules, mat treatment  
Directory boards: type, location  
Mail boxes, location, recessed  
Lobby clocks, if any  
Space assigned to specific functions - cafeterias,  
laboratory, etc.  
Space assigned for office use, clerical work space, etc.  
Flexible features of first floor layout - as to  
corridor arrangements, etc.

(D) SECOND FLOOR PLAN

General layout  
Light wells  
Core areas  
Corridor locations  
Administrative layout  
Executive offices  
Supplemental offices - modular design - areas  
and depth of space  
Clerical work space  
Other functional areas  
Inter-communication systems  
Operational flow

(E) THIRD FLOOR PLAN

General layout  
Light wells  
Core areas  
Corridors  
Functional space allocation

SECTION (2) - DETAILED PLANS(A) FOUNDATION

Type: caisson, piling spread  
Depth of excavation  
Unit of excavation cost  
Soil pressure factor  
Local water table  
Waterproofing and damp courses  
Sub-drainage

(B) TYPICAL CORRIDORS

Width and height  
Floor materials  
Wall finish; wainscot, height, cap  
Doors  
Lighting and fixtures  
Borrowed light, if any  
Wall trim wire mold  
Meter cabinets  
Janitor closets  
Floor directory  
Mail chute  
Hose cabinets  
Stairs: treads, risers, handrails, newels

(C) OFFICE SPACE

Size: width, height, depth  
Floor: type of finish or covering  
Windows: size, style, reveal, stools, material  
Doors; private, corridor, inter-communicating  
Partitions - permanent, removable  
Trim; base, chair rail, picture mold  
Thresholds  
Wardrobes, lavatory cabinets  
Lavatories; type, size  
Shades, blinds, awnings  
Vaults, safes, cabinets  
Soundproofing

(D) TOILET ROOMS (Also see Section 3-G)

Number and arrangement  
Location and size, number of fixtures  
Floor material and finish  
Stalls and doors  
Wall finish  
Mirrors, location, size  
Lighting  
Ventilation  
Soap and towels, electric drying machines  
Rest room  
Vending machine and waste receptacles

REPORT ON THE  
USE OF DEEP OFFICE SPACE BY MEDIUM SIZED TENANTS

\*\*\*\*\*

EARLE SHULTZ

REPORT ON THE USE OF DEEP OFFICE SPACE BY MEDIUM SIZED TENANTS

EARLE SHULTZ

With full air conditioning and high intensity lighting, it has been found practical for big companies to use deep office space in large full-floor areas. This is because they have large working departments in which a compact layout increases efficiency, and where windows have only a psychological value. With the modern trend toward reduction in the use of private offices and the substitution for them of bank screen or railing enclosures, such enclosures need not have windows. This makes it possible for them to be placed in the location most efficient for their departments.

Some of the values of large areas for big companies are:

1. The air conditioning and high intensity lighting provide more comfortable and efficient working conditions for their employees.
2. The large areas make possible a more efficient work flow pattern for their departments.
3. Supervision by management can be closer and more effective by putting management personnel in private offices or enclosures next to their people, without regard to windows.
4. The more compact arrangements possible in large areas enable these companies to use fewer square feet per employee, thus reducing their rent.

To date, the "full-floor" buildings that have been built have 25,000 square feet or more per floor, and are occupied almost exclusively by full-floor or multi-floor tenants. The number of

such large tenants is but a small percentage of the total number of tenants in a city, and in only the largest cities are there enough of such tenants to justify building full-floor buildings for them.

The problem thus arises whether it is possible to develop a floor layout such that smaller tenants can get the advantages now obtained by the largest tenants. This will depend upon the possibility of subdividing large open floors for medium size and smaller tenants.

It is evident that such subdivisions must extend from a corridor to the exterior walls. This dimension should be greater than the deepest practical office depth in standard office buildings depending upon windows for light and ventilation. This would be more than 30 feet. Its width will be determined by the most efficient module in which a compact layout of working desks can be arranged; or in which an adequate private office or enclosure can be accommodated.

The smallest office should be two modules in width, so as to allow private offices, where required, to be on one side with working space on the other (See Plan I). Also, the smallest office should be four modules long to allow working space between private offices, thereby permitting departmental separation (See Plan II). Also, to obtain the most intensive use of the space, it should be possible to put together four or more modules of working space (See Plans III, IV, V, and VI).

The module should also be of such size that when smaller private enclosures are installed, the unused space in the module

will be of sufficient size to effectively expand the adjoining module (See Plan V).

From a study of many layouts, it is found that the practical module size is 12 feet by 12 feet in the clear. To allow for partitions, 6 inches are added, making the actual module  $12\frac{1}{2}$  feet square. A module of this size will be adequate for four employees seated at standard sized desks. This means that subdivisions of one-half module may be made in either direction.

Four of such modules will provide a column spacing of 25 feet by 25 feet. Eight modules give a minimum office 25 feet by 50 feet, with a net rentable area of 1,258.3 square feet (See Plan VII). Larger offices may be obtained by adding full or half modules to the width of the minimum layout. Also the building can be built with offices more than four modules deep. Corridors will be one-half module in width. For larger tenants they can be removed or relocated. The one-half module not used for corridors will fit efficiently to the adjoining module (See Plan VIII).

Plan IX shows a standard lighting layout for a minimum office. With the ceiling outlets as shown, fixtures can be hung either lengthwise or crosswise of the office, and additional fixtures may be installed as indicated. Also, subdivisions of whole or one-half modules may be made without changing circuits.

Plan X shows the standard duct layout that will serve all office subdivisions.

To offset, as much as possible, the loss of the psychological value of windows, two things must be done.

1. The high intensity lighting should be not less than

60 foot-candles, and could better be from 75 to 100 foot-candles.

2. The offices should be decorated in bright cheerful colors and designs.

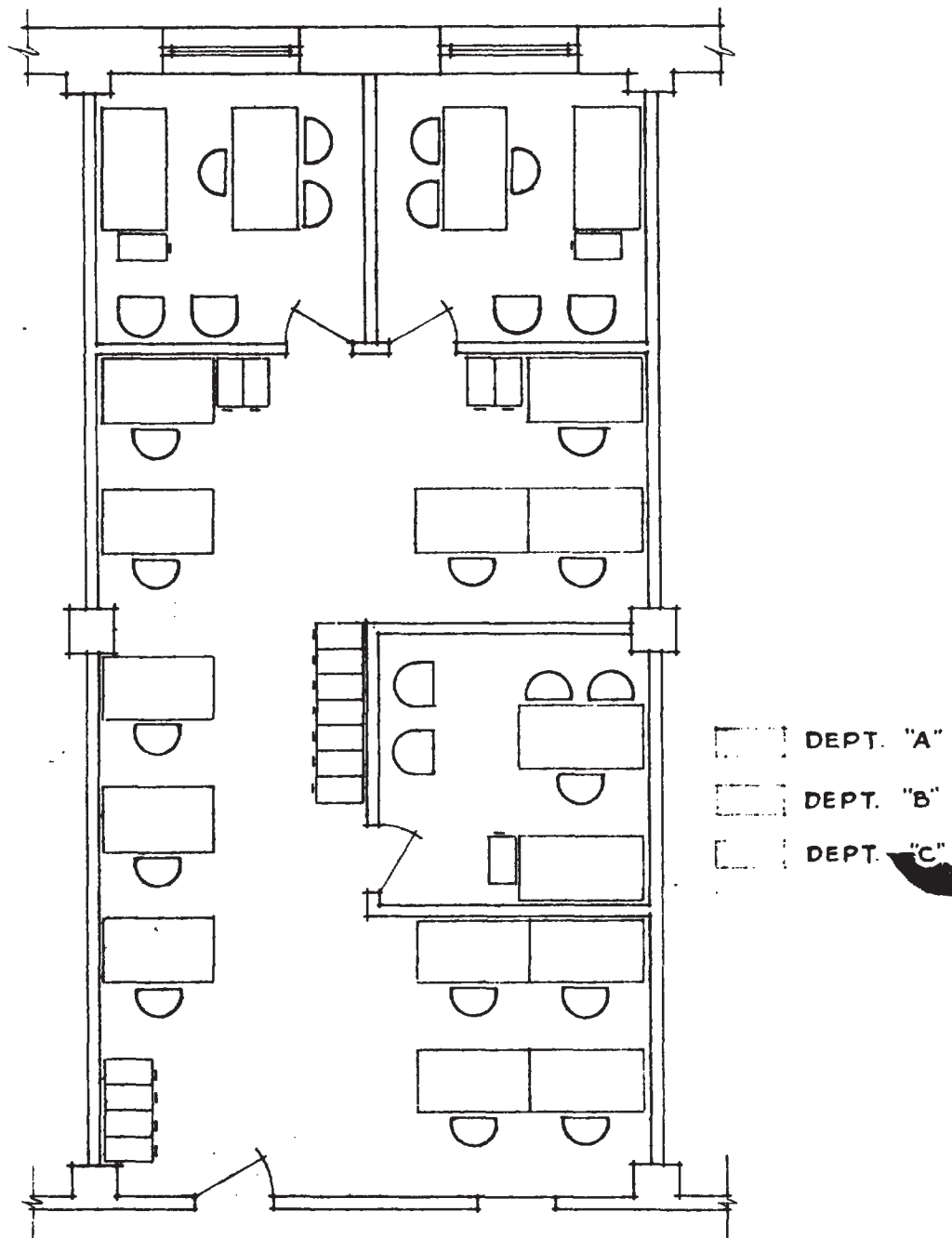
So far the value of full-floor space to the tenants has been discussed. It also has important values to the building owner.

1. Such a building costs less per square foot of rentable area to build. This is due to obtaining more square feet of rentable area per foot of expensive exterior wall, and also to requiring fewer cubic feet of volume per rentable square foot. Fewer and cheaper (fixed) windows can be used.

2. A study of layouts, Plans III, IV, V, and VI, shows tenants can be housed in 75 square feet or less per person. In the standard shallow-space office building, 100 to 125 or more square feet per person are required. This means that a tenant now paying \$3.00 per square foot in an old style building, where he is using 100 square feet per person, could pay \$4.00 in this type of building without increasing his monthly rent. Or, at the same \$3.00 per square foot, he could reduce his monthly rent 25%. Thus the full-floor building can charge higher rates per square foot and still compete with the older building.

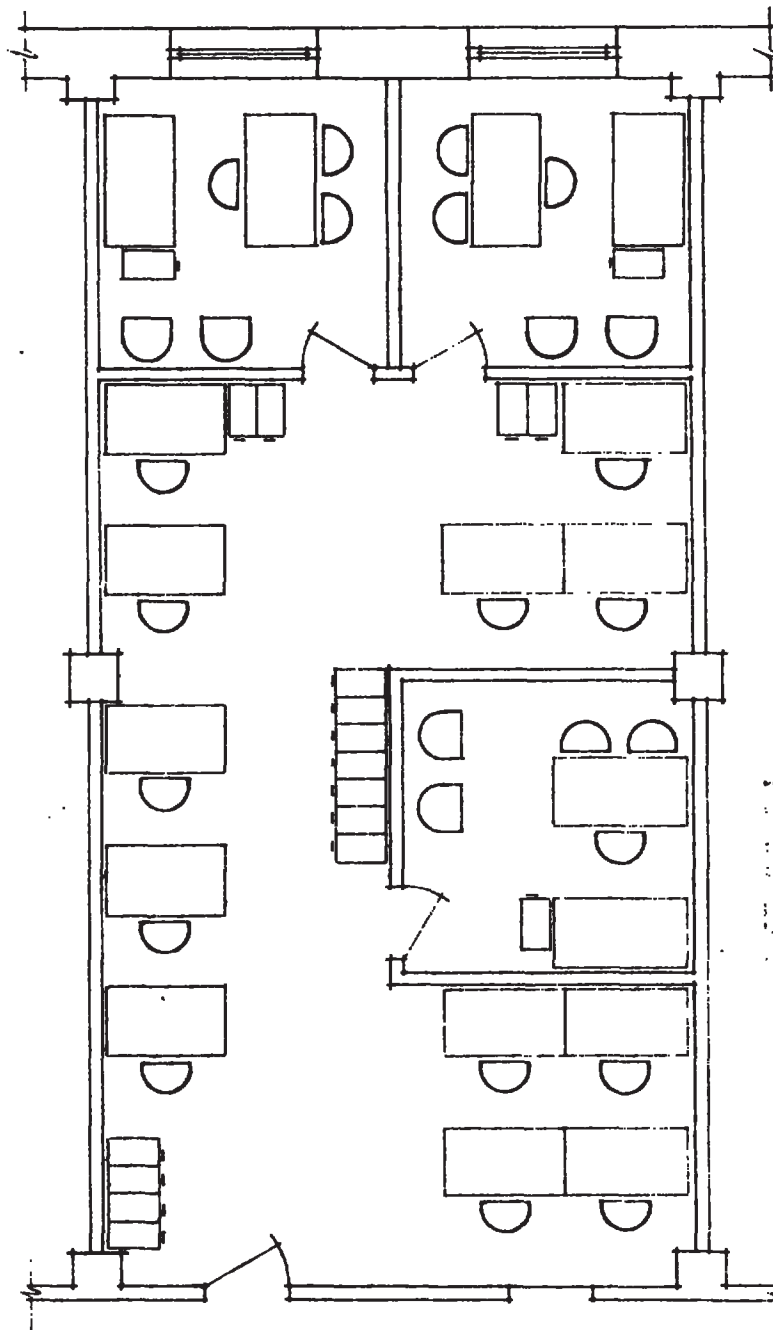
3. The air conditioning and high intensity lighting, with modernistic decorations, create such efficient, comfortable and attractive offices that they will pull tenants from the older buildings, even at higher rents.

November 10, 1952.



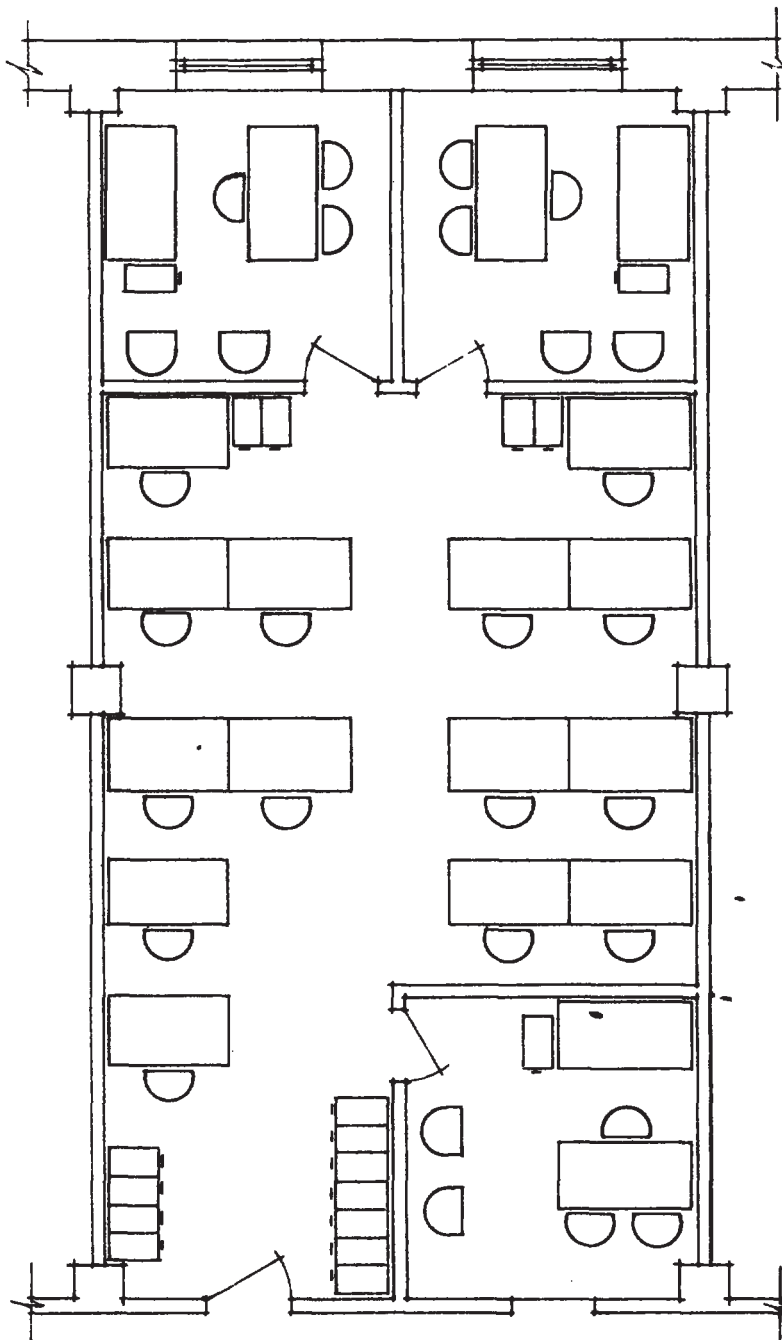
## PLAN No. II

Three Private Offices  
Three Departments  
Fifteen People  
84 Sq. Ft. Per Person



## PLAN No. II

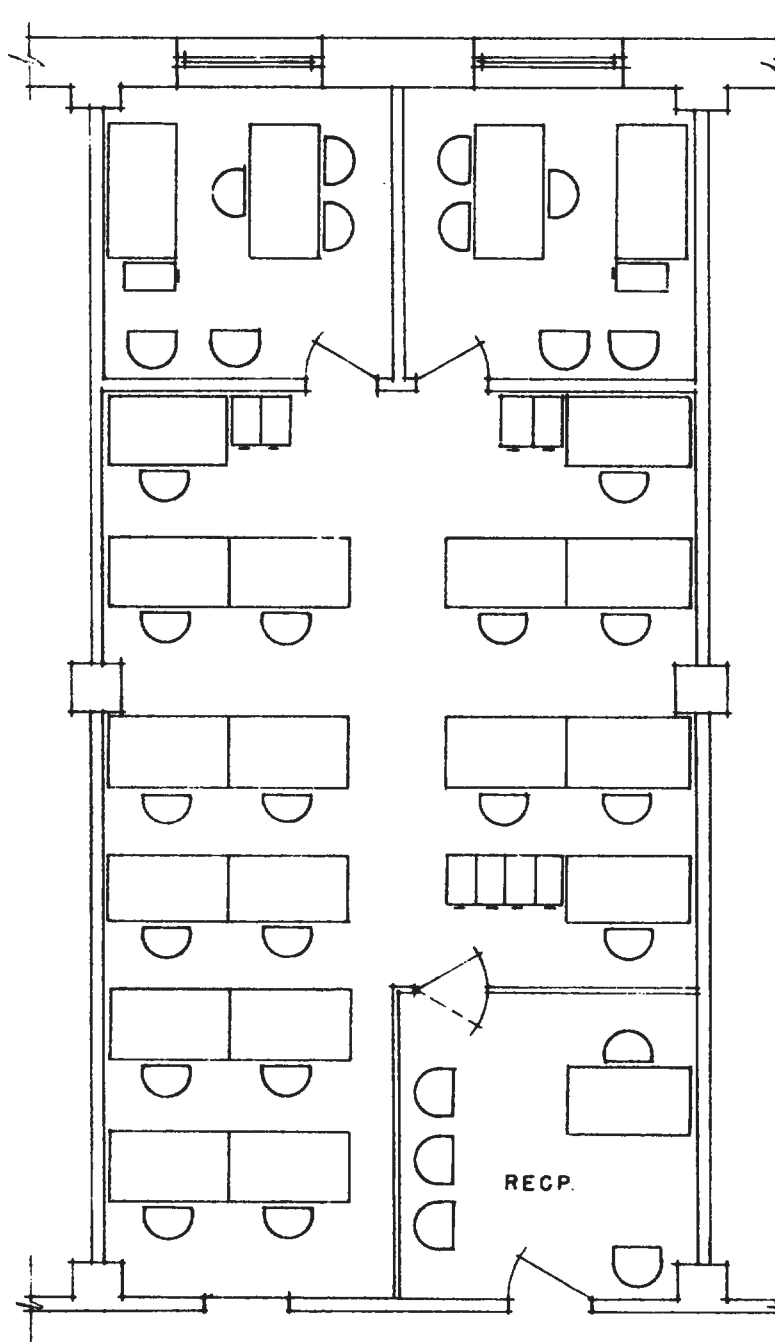
Three Private Offices  
Three Departments  
Fifteen People  
84 Sq. Ft. Per Person



## PLAN No. III

Three Private Offices

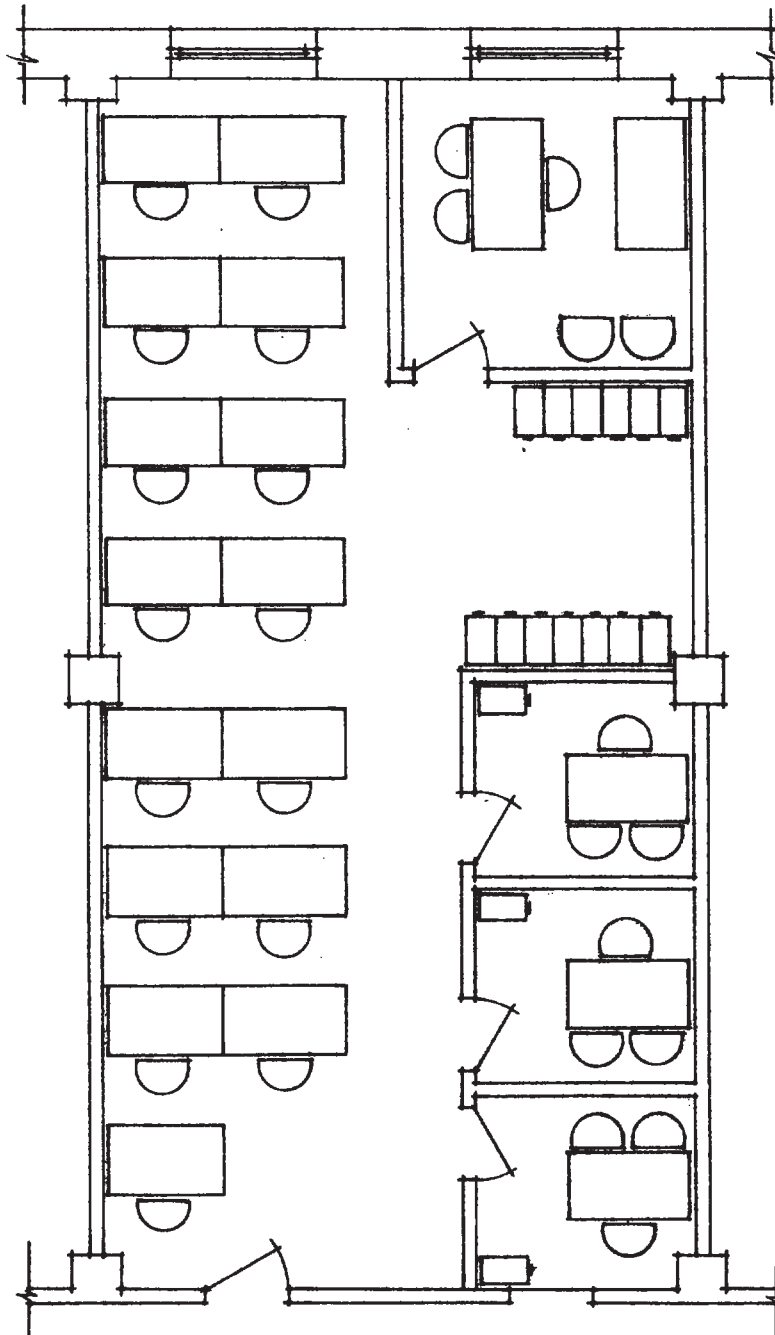
Seventeen People  
74 Sq. Ft. Per Person



## PLAN No. IV

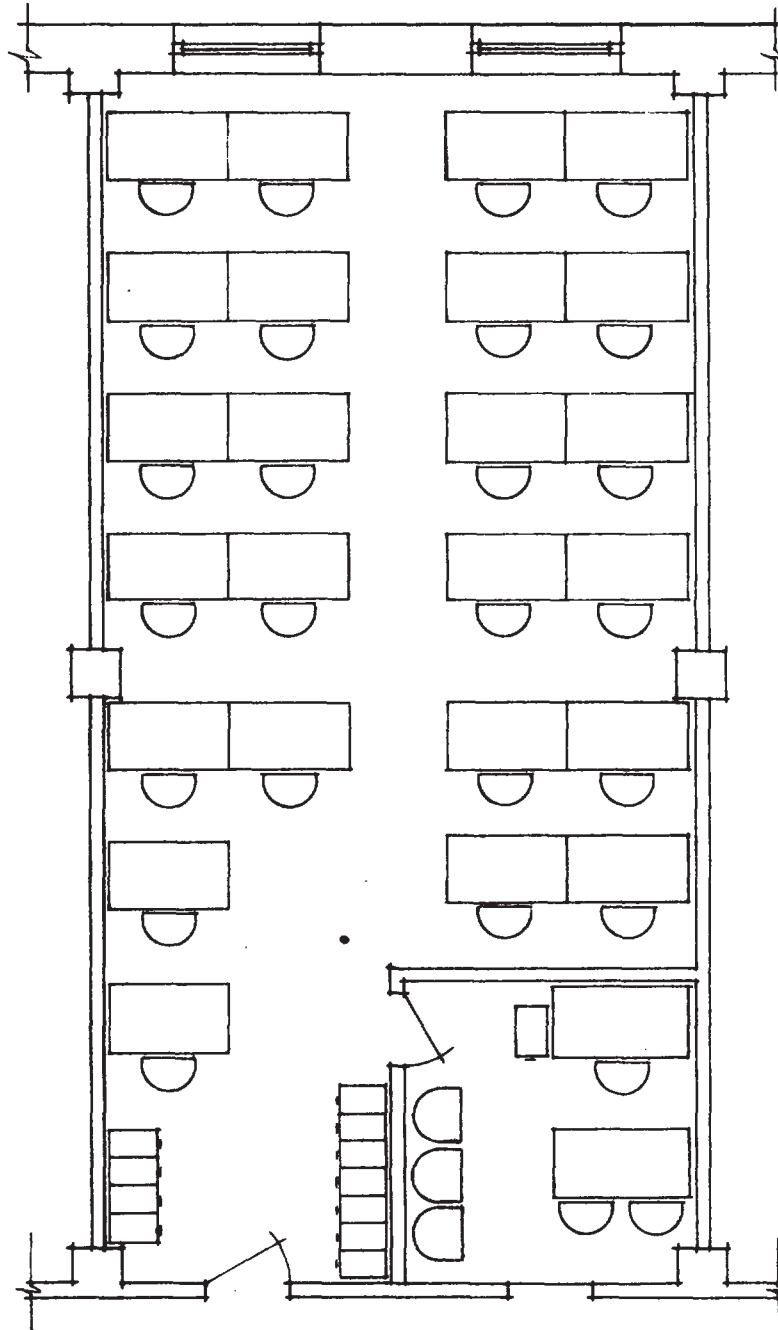
Two Private Offices

Twenty People  
63 Sq. Ft. Per Person



## PLAN No. V

One Large and Three Small Private Offices  
Twenty People  
63 Sq. Ft. Per Person  
Compare with PLAN No. I

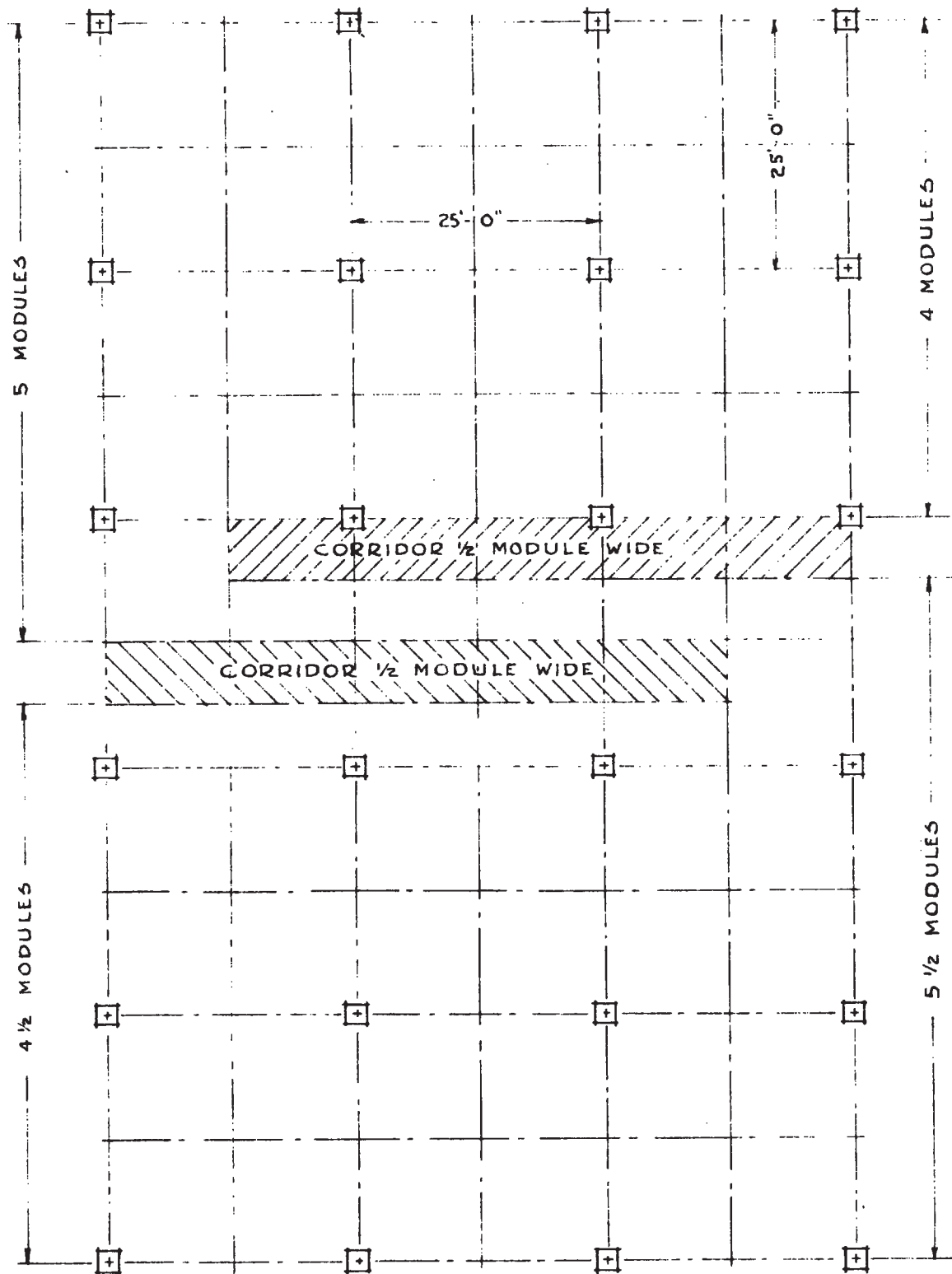


## PLAN No. VI

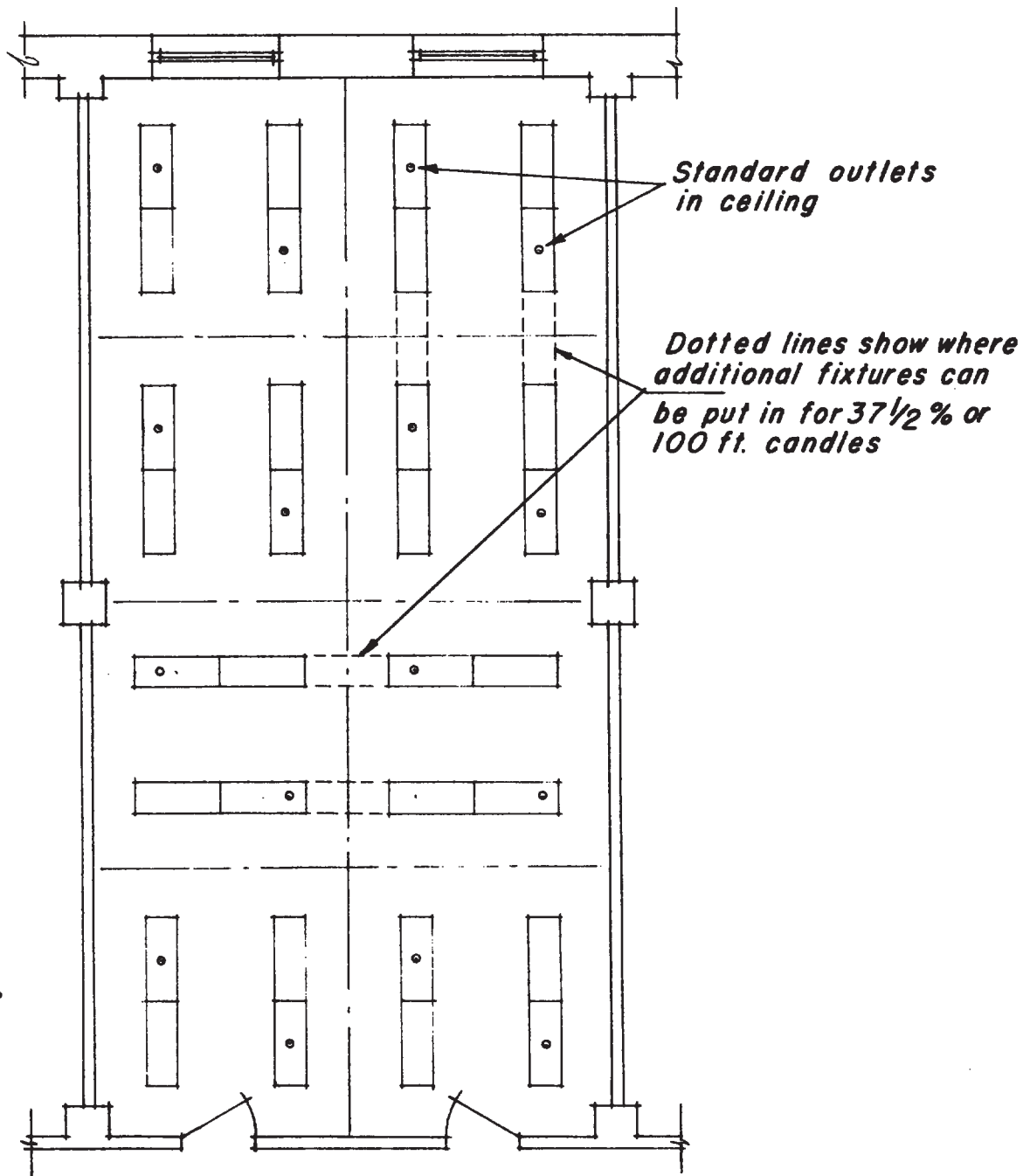
One Private Office  
Twenty-five People  
50 Sq. Ft. Per Person

With no Private Office can accommodate Twenty-nine People  
or  
43 Sq. Ft. Per Person

**Modules 12' X 12' Inside of Partitions**  
**Modules 12'6" X 12'6" Overall.**  
**Column Spacing 25' X 25'**  
**Rentable Area 25'0" X 50'4" = 1258.3 Sq. Ft.**



**PLAN VIII**  
 COLUMN SPACING  
 and  
 CORRIDOR LOCATIONS



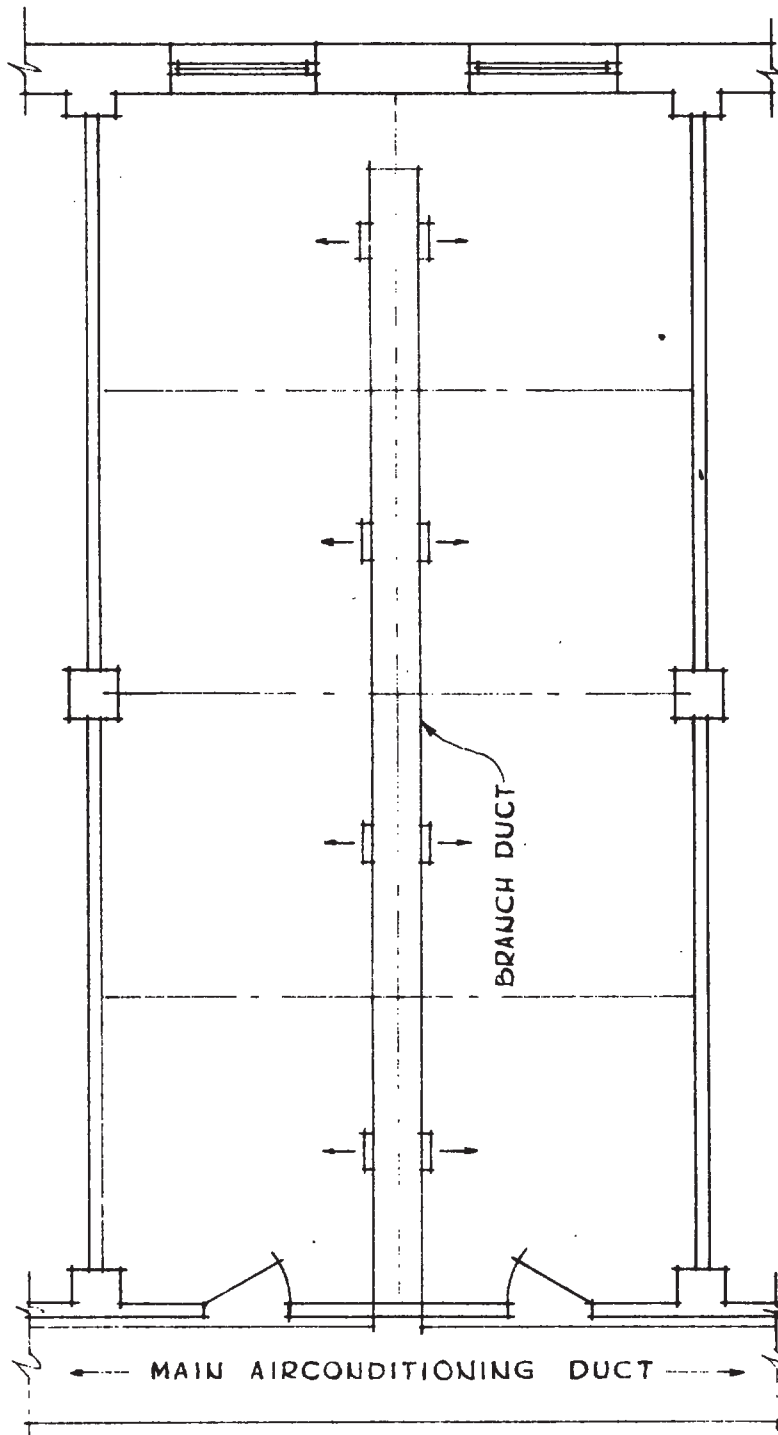
## PLAN No. IX

### STANDARD LIGHTING LAYOUT

ST'D. U.R.C. Fluorescent

4-Lite 200Watt Ceiling Fixture

Approx. 65 - 75 ft. candles



**PLAN X**  
STANDARD DUCT LAYOUT

SECTION (2) - DETAILED PLANS (Continued)(E) ROOF

Access  
Type - material  
Cornices  
Parapet wall construction  
Coping  
Flashing  
Heat insulation  
Skylights  
Smoke stack  
Ventilating ducts  
Down spouts  
Flag pole  
Signs, radio towers, etc.

(F) CONSTRUCTION

Type  
Height of building  
Floor to floor heights  
Slabs; tile arch, concrete joist, etc.  
Drop ceilings  
Expansion joints  
Floor load design  
Fireproofing  
Clear ceiling and soffit of beam heights  
Economics of column spacing

(G) BUILDING EXTERIOR

Nature of treatment, basis of design  
Materials: granite, stone, brick, terra cotta, concrete  
Trim: base course, belt courses, cornices  
Window spacing  
Light court, size, finish  
Sidewalks, areaways, drives, etc.  
Fire escapes  
Entrance lamps  
Boiler plate and cast iron wheel guards

SECTION (3) - MECHANICAL ITEMS(A) ELEVATORS AND ESCALATORS

Location  
Type, capacity, speed  
Number of escalators - reversible, double run  
Number of elevators - passenger, freight  
Size of cabs: width, depth, height  
Material: wood, metal, finish  
Floor covering  
Lighting  
Cab doors: type and dimensions  
Construction of top  
Emergency access panels

SECTION (3) - MECHANICAL ITEMS (Continued)(B) HEATING, VENTILATING, AIR CONDITIONING

Type of system  
Distribution system  
Zoning; heat economy  
Control; central, thermostatic, hand valves, orifice plate  
Risers and returns, material  
Concealed versus exposed pipes  
Insulation of piping  
Radiation  
Condensation meters, recording thermometers  
Air conditioning - space considered - period considered  
Exterior, interior zones  
Type of refrigerant used  
Capacity of plant or plants  
Method of conveyance  
Area served - square feet - cubic feet  
Cooling towers  
Exhaust systems

(C) PLUMBING

Hot water lines; pipe material  
Cold water piping; material  
Compressed air piping  
Gas; piping, meters, drips  
Ice water system; refrigeration, outlets  
Vent stacks, material  
Water softener, de-aerator, de-activator  
Slop sinks, drains  
House tank; type, capacity  
Rodding basins, bilge ejectors  
Pumps; feed water, house tank  
Pipe reaming, straight runs  
Expansion joints

(D) TOILET ROOM EQUIPMENT

Faucets; self closing  
Lavatories; wall or floor type, material stoppers  
Toilets; type, wall hung, floor type, material  
Urinals - wall hung, floor type  
Flush valves - toilets, urinals  
Access panels - shut offs, cleanouts  
Floor drains  
Soap lines

(E) ELECTRIC WORK

Requirements - wattage  
Power wiring - lighting installation  
Service access to basement  
Switchboard and service mains  
Distribution panels, feeders  
Under-floor ducts  
Transformers

SECTION (3) - MECHANICAL ITEMS(E) ELECTRIC WORK (Continued)

Meters  
Conduits, oval duct, oval flex, B.X.  
Switches; toggle, push, canopy  
Base receptacles  
Lighting fixtures  
Low tension wiring  
Outside lighting

(F) FIRE PROTECTION

Fire towers, fire escapes, exit signs  
Sprinkler systems  
Wire glass - use of  
Metal trim  
Fire doors, pullbars  
Shutters, water curtains  
Hose cabinets, connections  
Extinguishers  
Alarm systems  
Insurance rating  
Water pressure  
Siamese and sill cock

(G) HARDWARE

Doors: locks, checks, butts, mail slots  
Windows  
Window cleaner bolts  
Toilet - marble hardware

SECTION (4) - SPECIAL FEATURES

Auditorium  
Dispensary  
Cafeteria and kitchen  
Museum  
Laboratory facilities  
Work shop facilities  
Print shop facilities  
Public address system  
Inter-communication  
Waste paper disposal